

CLAIMS

What is claimed is:

- 5 1. A method for hub-based network access, the method comprises:

receiving packets from at least one of a plurality of clients;

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determining whether a network access application is active for the at least one of the plurality of clients;

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when the network access application is active for the at least one of the plurality of clients, processing data of at least one of the packets in accordance with the network access application to produce network data;

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determining access to a network connection for transmission of the network data based on a client-access-to-the-network-connection scheme to produce a determined network access; and

transporting the network data via the network connection
based on the determined network access.

2. The method of claim 1, wherein the determining whether
5 the network access application is active further comprises:

interpreting a header section of at least one of the
packets to identify the at least one of the plurality of
clients;

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interpreting the header section of the at least one of the
packets to determine a type of network access; and

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determining whether the network application is active based
on the identity of the at least one of the plurality of
clients and on the type of network access.

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3. The method of claim 2, wherein the determining the
type of network access further comprises at least one of:

interpreting the header section of the at least one of the
packets to determine e-mail network access; and

interpreting the header section of the at least one of the packets to determine web browser network access.

4. The method of claim 1, wherein the determining access to the network connection further comprises at least one of:

time division multiplexing access to the network connection based on clients of the plurality of clients that currently have an active network access application;

carrier sensed multiple access processing the access the network connection among the clients of the plurality of clients that currently have an active network access application;

passing a token among the clients of the plurality of clients that currently have an active network access application to obtain access to the network connection;

queuing the network data in a first-in-first-out buffer to obtain access to the network connection; and

requesting access to the network connection.

7. A method for hub-based network access, the method comprises:

receiving packets from at least one of a plurality of
5 clients;

interpreting each of the packets to determine whether the
each of the packets is a client-to-client packet or a
network packet;

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for each of the packets that is a client-to-client packet,
processing the each of the packets that is a client-to-
client packet to produce processed client packets;

15 multiplexing the processed client packets for transmission
to the plurality of clients to produce multiplexed client
packets; and

transmitting the multiplexed client data to the plurality
20 of clients.

8. The method of claim 7, wherein the interpreting each
of the packets further comprises:

interpreting a header section of the each of the packets to
identify a destination address;

determining that the destination address addresses one of
5 the plurality of clients to determine that the each packet
is a client-to-client packet; and

determining that the destination address addresses an
entity other than one of the plurality of clients.

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9. The method of claim 7, wherein the interpreting each
of the packets further comprises:

interpreting an identifying field of the each of the
15 packets to determine whether the each of the packets is a
client-to-client packet or a network packet.

10. The method of claim 7, wherein the processing the each
of the packets that is a client-to-client packet further
20 comprises:

determining access to a shared communication path of the
plurality of clients, wherein a type of access includes at
least one of: time division multiplexing, frequency

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division multiplexing, carrier sensed multiple access, token ring, and first-in-first-out buffering.

11. The method of claim 7 further comprises:

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for each of the packets that is a network packet,
identifying at least one of the plurality of clients;

determining whether a network access application is active

10 for the at least one of the plurality of clients;

when the network access application is active for the at
least one of the plurality of clients, processing data of
at least one of the network packets in accordance with the

15 network access application to produce network data;

determining access to a network connection for transmission
of the network data based on a client-access-to-the-
network-connection scheme to produce a determined network

20 access; and

transporting the network data via the network connection
based on the determined network access.

12. A method for hub-based network access, the method comprises:

receiving network packets via a network connection;

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determining identity of at least one of a plurality of clients as a target of at least one of the network packets to produce an identified client;

10 determining whether a network access application is active for the identified client;

when the network access application is active for the identified client, processing data of the at least one of

15 the network packets to produce client data;

multiplexing the client data for transmission to the plurality of clients to produce multiplexed client data;
and

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transmitting the multiplexed client data to the plurality of clients.

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17. The method of claim 16, wherein the multiplexing of the client data further comprises:

5 multiplexing packets of the stored display data to produce the multiplexed client data.

18. The method of claim 12 further comprises:

10 receiving client-to-client packets from at least one of a plurality of clients;

processing the client-to-client packets to produce processed client packets;

15 multiplexing the processed client packets with the client data for transmission to the plurality of clients to produce multiplexed client packets; and

20 transmitting the multiplexed client data to the plurality of clients.

19. A local area network hub comprises:

processor;

5 memory operably coupled to the processor, wherein the
memory includes first memory section for storing a
plurality of network access applications, second memory
section for storing a modem accessing application, third
memory section for storing a client servicing application,
10 fourth memory section for storing display data, and a fifth
memory section for storing client data;

video graphics processor operably coupled to the memory,
wherein the video graphics processor generates the display
15 data from network data;

memory controller operably coupled to the processor, the
video graphics processor, and the memory, wherein the
memory controller controls access to the memory;

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modem interface operably coupled to the processor, wherein
the modem interface provides a connection to a modem; and

client transceiving module operably coupled to the memory and memory controller, wherein the client transceiver receives the client data from at least one of a plurality of clients and provides at least some of the display data to at least one client of the plurality of clients, wherein the processor, based on the client data, performs the client application to obtain the network data.

20. The local area network hub of claim 19, wherein the memory further comprises:

sixth memory section for storing a client-to-client communication application, wherein the processor performs the client-to-client communication application to support client-to-client communications.

21. The local area network hub of claim 19 further comprises:

a plurality of video graphics processors, wherein each of the video graphics processor generates the display data from the network data for a corresponding one of the plurality of clients.

22. The local area network hub of claim 19, wherein the memory controller further comprises:

memory chip set that provides selective access to the

5 memory by the processor and the video graphics processor.

23. An apparatus for hub-based network access, the apparatus comprises:

processing module; and

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memory operably coupled to the processing module, wherein the memory stores operational instructions that cause the processing module to:

10 receive packets from at least one of a plurality of clients;

determine whether a network access application is active for the at least one of the plurality of

15 clients;

when the network access application is active for the at least one of the plurality of clients, process data of at least one of the packets in accordance with the
20 network access application to produce network data;

determine access to a network connection for transmission of the network data based on a client-

access-to-the-network-connection scheme to produce a
determined network access; and

transport the network data via the network connection
5 based on the determined network access.

24. The apparatus of claim 23, wherein the memory further
comprises operational instructions that cause the
processing module to determine whether the network access
10 application is active by:

interpreting a header section of at least one of the
packets to identify the at least one of the plurality of
clients;

15 interpreting the header section of the at least one of the
packets to determine a type of network access; and

determining whether the network application is active based
20 on the identity of the at least one of the plurality of
clients and on the type of network access.

25. The apparatus of claim 24, wherein the memory further
comprises operational instructions that cause the

processing module to determine the type of network access
by at least one of:

interpreting the header section of the at least one of the

5 packets to determine e-mail network access; and

interpreting the header section of the at least one of the
packets to determine web browser network access.

10 26. The apparatus of claim 23, wherein the memory further
comprises operational instructions that cause the
processing module to determine access to the network
connection by at least one of:

15 time division multiplexing access to the network connection
based on clients of the plurality of clients that currently
have an active network access application;

carrier sensed multiple access processing the access the
20 network connection among the clients of the plurality of
clients that currently have an active network access
application;

passing a token among the clients of the plurality of clients that currently have an active network access application to obtain access to the network connection;

- 5 queuing the network data in a first-in-first-out buffer to obtain access to the network connection; and

requesting access to the network connection.

- 10 27. The apparatus of claim 23, wherein the memory further comprises operational instructions that cause the processing module to:

log a destination address and a source address for the

- 15 network data, wherein the source address identifies the at least one of the plurality of clients;

receive network packets via the network connection;

- 20 interpret a header section of the network packets to identify a response to the network data; and

when a network packet of the network packets is at least a portion of the response, provide the network packet to the at least one of the plurality of clients.

- 5 28. The apparatus of claim 23, wherein the memory further comprises operational instructions that cause the processing module to:

when the network access application is not active, open a
10 network access application for the at least one of the plurality of clients.

29. An apparatus for hub-based network access, the apparatus comprises:

processing module; and

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memory operably coupled to the processing module, wherein the memory stores operational instructions that cause the processing module to:

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receive packets from at least one of a plurality of clients;

interpret each of the packets to determine whether the each of the packets is a client-to-client packet or a

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network packet;

for each of the packets that is a client-to-client packet, process the each of the packets that is a client-to-client packet to produce processed client
20 packets;

multiplex the processed client packets for transmission to the plurality of clients to produce multiplexed client packets; and

transmit the multiplexed client data to the plurality of clients.

5 30. The apparatus of claim 29, wherein the memory further comprises operational instructions that cause the processing module to interpret each of the packets by:

10 interpreting a header section of the each of the packets to identify a destination address;

determining that the destination address addresses one of the plurality of clients to determine that the each packet is a client-to-client packet; and

15 determining that the destination address addresses an entity other than one of the plurality of clients.

20 31. The apparatus of claim 29, wherein the memory further comprises operational instructions that cause the processing module to interpret each of the packets by:

interpreting an identifying field of the each of the packets to determine whether the each of the packets is a client-to-client packet or a network packet.

5 32. The apparatus of claim 29, wherein the memory further comprises operational instructions that cause the processing module to process the each of the packets that is a client-to-client packet by:

10 determining access to a shared communication path of the plurality of clients, wherein a type of access includes at least one of: time division multiplexing, frequency division multiplexing, carrier sensed multiple access, token ring, and first-in-first-out buffering.

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33. The apparatus of claim 29, wherein the memory further comprises operational instructions that cause the processing module to:

20 for each of the packets that is a network packet, identify at least one of the plurality of clients;

determine whether a network access application is active for the at least one of the plurality of clients;

when the network access application is active for the at
least one of the plurality of clients, process data of at
least one of the network packets in accordance with the

5 network access application to produce network data;

determine access to a network connection for transmission
of the network data based on a client-access-to-the-
network-connection scheme to produce a determined network

10 access; and

transport the network data via the network connection based
on the determined network access.

34. An apparatus for hub-based network access, the apparatus comprises:

processing module; and

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memory operably coupled to the processing module, wherein the memory stores operational instructions that cause the processing module to:

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receive network packets via a network connection;

determine identity of at least one of a plurality of clients as a target of at least one of the network packets to produce an identified client;

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determine whether a network access application is active for the identified client;

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when the network access application is active for the identified client, process data of the at least one of the network packets to produce client data;

multiplex the client data for transmission to the plurality of clients to produce multiplexed client data; and

5 transmit the multiplexed client data to the plurality of clients.

35. The apparatus of claim 34, wherein the memory further comprises operational instructions that cause the
10 processing module to determine identity of at least one of the plurality of clients by:

interpreting a header section of the at least one network packets, wherein the header section includes an address of
15 the at least one of the plurality of clients.

36. The apparatus of claim 34, wherein the memory further comprises operational instructions that cause the
processing module to determine whether the network access
20 application is active by:

interpreting a header section of the at least one of the network packets to identify the at least one of the plurality of clients;

interpreting the header section of the at least one of the network packets to determine a type of network access; and

- 5 determining whether the network application is active based on the identity of the at least one of the plurality of clients and on the type of network access.

37. The apparatus of claim 36, wherein the memory further
10 comprises operational instructions that cause the processing module to determine the type of network access by at least one of:

- interpreting the header section of the at least one of the
15 packets to determine e-mail network access; and

interpreting the header section of the at least one of the packets to determine web browser network access.

- 20 38. The apparatus of claim 34, wherein the memory further comprises operational instructions that cause the processing module to process of the data of the at least one of the network packets by:

preparing display data based on the data of the at least one of the network packets and the network access application;

- 5 storing the display data in a frame buffer to produce stored display data; and

when a frame of display data is available, retrieving portions of the stored display data for packetizing.

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39. The apparatus of claim 38, wherein the memory further comprises operational instructions that cause the processing module to multiplex the client data by:

- 15 multiplexing packets of the stored display data to produce the multiplexed client data.

40. The apparatus of claim 34, wherein the memory further comprises operational instructions that cause the

- 20 processing module to:

receive client-to-client packets from at least one of a plurality of clients;

process the client-to-client packets to produce processed client packets;

multiplex the processed client packets with the client data

5 for transmission to the plurality of clients to produce multiplexed client packets; and

transmit the multiplexed client data to the plurality of clients.